WHAT IS CLAIMED IS:

1. A semiconductor photo-detector characterized in that:

a first semiconductor layer having a first conduction type, a second semiconductor layer having a second conduction type, and a photo-absorption part comprising a photo-absorption layer sandwiched between said first semiconductor layer and said second semiconductor layer are disposed on a substrate;

at least said photo-absorption layer is formed at a position apart inwardly by a finite length from an end surface of said substrate;

an end surface of said second semiconductor layer and said substrate or said end surface of said substrate is provided with a light incident facet angled inwardly as it separates from the surface of said second semiconductor or the surface of said substrate;

wherein light incident to said light incident facet is refracted at said light incident facet and transits said photo-absorption layer diagonally with respect to the layer thickness direction.

2. A production method of semiconductor photo-

detector characterized in that:

a first semiconductor layer having an intrinsic or a first conduction type, a second semiconductor layer having the same first conduction type, and a growth layer comprising a photo-absorption part including a photo-absorption layer sandwiched between said first semiconductor layer and said second semiconductor layer are disposed on a substrate;

a main inside part of said first semiconductor layer at the surface side, or said inside part and part of said photo-absorption layer is converted selectively to a second conduction type by diffusion of an impurity;

and an end surface of the substrate side growth layer except for said photo-absorption layer or said substrate is provided with a light incident facet angled inwardly as it separates from the surface side from a position apart by a finite length in a direction parallel to said substrate surface with respect to the photo-absorption part comprising said photo-absorption layer;

whereby obtaining a semiconductor photo-detector in which incident light is refracted at said light incident facet and transits said photo-absorption layer diagonally with respect to the layer thickness

direction.

3. A production method of semiconductor photo-detector characterized in that:

a first semiconductor layer having an intrinsic or a first conduction type, a second semiconductor layer having the same first conduction type, and a growth layer comprising a photo-absorption part including a photo-absorption layer sandwiched between said first semiconductor layer and said second semiconductor layer are disposed on a substrate;

a main inside part of said first semiconductor layer at the surface side, or said inside part and part of said photo-absorption layer is converted selectively to a second conduction type by ion implantation and subsequent anneal;

an end surface of the substrate side growth layer except for said photo-absorption layer or said substrate is provided with a light incident facet angled inwardly as it separates from the surface side from a position apart by a finite length in a direction parallel to said substrate surface with respect to the photo-absorption part comprising said photo-absorption layer,

whereby obtaining a semiconductor photo-detector

in which incident light is refracted at said light incident facet and transits said photo-absorption layer diagonally with respect to the layer thickness direction.

4. A semiconductor photo-detector characterized in that:

an intrinsic or a first conduction type semiconductor layer, a photo-absorption layer comprising a superlattice semiconductor layer or a multiple quantum well semiconductor layer, and a schottky electrode are disposed on a substrate;

a semiconductor multilayer structure of large schottky-barrier height having a schottky barrier higher in schottky barrier height than the schottky barrier between said photo-absorption layer and said schottky electrode is formed between said photo-absorption layer and said schottky electrode; and

an end surface of the substrate side growth layer except for said photo-absorption layer or said substrate is provided with a light incident facet angled inwardly as it separates from the surface side from a position apart by a finite length in a direction parallel to said substrate surface with respect to the photo-absorption part comprising said photo-absorption layer,

wherein incident light is refracted at said light incident facet and transits said photo-absorption layer diagonally with respect to the layer thickness direction.

5. The semiconductor photo-detector as claimed in Claim 4, wherein said semiconductor layer of large schottky-barrier height comprises $In_{1-x-y}Ga_xAl_yAs$ ($0 \leq x \leq 1$, $0 \leq y \leq 1$).

6. The semiconductor photo-detector as claimed in Claim 4, wherein said semiconductor layer of large schottky-barrier height comprises $In_{1-x-y}Ga_xAl_yAs$ ($0 \leq x \leq 1$, $0 \leq y \leq 1$) and thin $In_{1-u}Ga_uAs_{1-v}P_v$ ($0 \leq u \leq 1$, $0 \leq v \leq 1$) disposed thereon.

7. The semiconductor photo-detector of as claimed in any one of Claims 4, 5 and 6, wherein a compositionally graded or step-graded layer from the same composition as said photo-absorption layer to the same composition as said semiconductor layer of large schottky-barrier height is disposed between said photo-absorption layer and said semiconductor layer of large schottky-barrier height.

8. A semiconductor photo-detector characterized in

that:

a photo-absorption part comprising a semiconductor multilayer structure including a photo-absorption layer is provided on a substrate;

an end surface is provided with a light incident facet angled inwardly as it separates from the surface side; and

a V- or U-shaped groove is provided in opposition to said light incident facet,

wherein light incident from an optical fiber disposed in said groove is refracted at said light incident facet and transits said photo-absorption layer diagonally with respect to the layer thickness direction.

9. A production method of the semiconductor photo-detector as claimed in Claim 8, wherein said light incident facet and said V- or U-shaped groove are fabricated simultaneously by etching.

10. The semiconductor photo-detector as claimed in Claim 8, wherein said light incident facet and the vicinity thereof are buried in an organic substance.

11. A production method of semiconductor photo-detection device characterized in that, using the

semiconductor photo-detector as claimed in Claim 10, after making optical coupling with an optical waveguide, by removing said organic substance.

12. A production method of semiconductor photo-detection device characterized in that, using the semiconductor photo-detector as claimed in Claim 10, after making optical coupling with an optical waveguide, space between said semiconductor photo-detector and said optical waveguide is buried in with an organic substance.

13. A semiconductor photo-detector characterized in that:

a photo-absorption part comprising a semiconductor multilayer structure including a photo-absorption layer is provided on a substrate;

an end surface is provided with a light incident facet angled inwardly as it separates from the surface side; and

said substrate is protruded by a finite length from a tip of said end surface at said light incident facet side,

wherein light incident from an optical waveguide precisely positioned by contacting against said protruded part of said substrate is refracted at

said light incident facet and transits said photo-absorption layer diagonally with respect to the layer thickness direction.

14. A semiconductor photo-detector characterized in that:

a photo-absorption part comprising a semiconductor multilayer structure including a photo-absorption layer is provided on a substrate;

an end surface is provided with a light incident facet angled inwardly as it separates from the surface side; and

a main reaching area of incident light refracted at an upper layer of said photo-absorption layer is terminated with a substance having a smaller refractive index than a semiconductor layer,

wherein incident light is refracted at said light incident facet and transits said photo-absorption layer diagonally with respect to the layer thickness direction, and said transit light total reflected by said smaller refractive index substance of upper layer of said photo-absorption layer.

15. A semiconductor photo-detection device characterized in that:

a photo-absorption part comprising a semiconductor multilayer structure including a photo-absorption layer is provided on a substrate;

a refraction type semiconductor photo-detector provided on an end surface with a light incident facet angled inwardly as it separates from the surface side, and an optical waveguide is disposed opposing said device; and

space between said refraction type semiconductor photo-detector and said optical waveguide is buried in with a solid or liquid,

wherein light incident from said optical waveguide to said light incident facet of said photo-detector is refracted at said light incident facet and transits said photo-absorption layer diagonally with respect to the layer thickness direction.